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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/808,895	03/15/2001	Francois Pachet	282666US8X	5275
22850 7590 01/28/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER FLANDERS, ANDREW C	
			ART UNIT 2615	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

09/808,895

Applicant(s)

PACHET ET AL.

Examiner

Andrew C. Flanders

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-42 and 44-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-42 and 44-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 31 October 2007 has been entered.

Response to Arguments

Applicant's arguments filed *** have been fully considered but they are not persuasive.

Applicant alleges regarding the 101 rejections:

"The outstanding Action states on page 3 that these claims are directed to a computer program per se, however, Applicants traverse this assertion and note that these claims are in fact each directed to a computer readable storage medium. MPEP §2106.01 clearly states "when functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized." Thus, Applicants respectfully submit that Claims 18 and 36 are in fact statutory and respectfully request that the rejection of Claims 18 and 36 under §101, be withdrawn."

Examiner respectfully disagrees with this allegation. Applicant submits that "when functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized." However, claims 18 and 36 do not claim any limitations as to a data structure being recorded onto a computer-readable medium. As a result, the claims can be interpreted as nothing more than program code and rejected under 101.

Applicant's remaining arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 18 and 36 are rejected under 35 U.S.C. 101 because they are directed to a computer program per se. A computer program is an abstract idea that does not fall within one of the four enumerated statutory subject matter categories.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2—42 and 44 - 46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 44 and 45 claim an “audio track each including an analog recording of an audio source.” However, the portion of the specification noted by Applicant as showing support for this new limitation does not teach this (pages 33 – 35). Rather, it teaches the audio track is typically WAV (but can be aiff, mpeg 4 not exclusively). These formats are known digital formats, i.e. digital representations of an analog audio recording. Thus, the audio track is not an analog recording, but a digital representation of one. No specific reference is made to this audio track being an analog recording.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2 – 9, 11 – 13, 23 and 44 – 46 are rejected under 35 U.S.C. 102(b) as being anticipated by Pachet (Constraint-Based Spatialization; Sony Computer Science Laboratories).

Regarding **Claims 44 and 45**, Pachet discloses:

A system for controlling an audio spatialisation in real time (section 3.1), comprising:

a display configured to display graphical representations of a plurality of audio sources (Fig. 2);

an input configured to access an audio stream coded in a common audio file (i.e. MIDI is a well known audio format and thus reads upon the limitation of “common”) composed of the plurality of audio sources associated to audio tracks, the audio tracks each an analog record of an audio source (i.e. sound sources received by the system; guitar track, drum track, and bass track; sections 3.1 – 3.2; while they are MIDI representations, they are actually a digital representation of an analog audio sound as they indicate a specific analog sound to be replicated when they are reproduced; this is in the same manner as disclosed by Applicant on pages 33 - 35 of the specification [i.e. a digital representation of an analog recording] and thus reads upon the claimed limitations);

a constraint unit configured to receive and process constraints expressing rules for a spatialisation of said audio stream (3.2 and 3.3);

an interface unit configured to enter spatializing commands to said constraint unit (section 3.4);

wherein said interface unit enters at least one user input for effecting a spatialisation command on one audio source in a group of two or more audio sources (Section 3.4);

the spatialisation command is effected on the audio sources based on the position of the graphical representation of the audio sources on the display (Section 3.4, 3.2 and 3.3);

said constraint unit is programmed to process said group of two or more audio sources as a unitary object for the application of the constraints (Sections 3.1 – 3.4); and

when a user moves the position of one audio source in said group of two or more audio sources, an algorithm sets the position on the display for the other audio sources in the group of two or more audio sources based on the constraints (Fig. 2, sections 3.1 – 3.4).

Regarding **Claim 2**, in addition to the elements stated above regarding claim 44, Pachet further discloses:

wherein said group of audio sources is identified with a respective group of individually accessible audio tracks (i.e. guitar track, drum track, and bass track; sections 3.4; Fig. 2).

Regarding **Claim 3**, in addition to the elements stated above regarding claim 44,
Pachet further discloses:

wherein said group of audio sources reflects an internal coherence with respect
to said rules for spatialisation (Section 4.4, 4.2)

Regarding **Claim 4**, in addition to the elements stated above regarding claim 44,
Pachet further discloses:

wherein said interface unit is adapted to display:
at least one group icon representing a grouped spatialisation command, said icon
being positioned according to a topology reflecting a spatialisation and being
displaceable by a user (Fig. 2), and
links between said icons expressing constraints to be applied between said at
least one group icons (Fig. 2 and sections 3.1 – 3.4).

Regarding **Claim 5**, in addition to the elements stated above regarding claim 44,
Pachet further discloses:

further adapted to process global commands through said interface unit involving
a plurality of groups of audio sources simultaneously (Section 3.1 – 3.4; 4.2

Regarding **Claim 6**, in addition to the elements stated above regarding claim 5,
Pachet further discloses:

wherein said global commands comprise at least one among:

a balance between a plurality of groups of audio sources, and
a volume level, whereby positions of groups can be changed simultaneously in a
proportional manner (Section 2.1, 3.1).

Regarding **Claim 7** in addition to the elements stated above regarding claim 44,
Pachet further discloses:

wherein said constraints are one-way constraints, each constraint having a
respective set of input and output variables entered by a user through said interface
(Section 3.4).

Regarding **Claim 8** in addition to the elements stated above regarding claim 44,
Pachet further discloses:

further adapted to provide a program mode for the recording and mixing
constraints entered through said interface unit in terms of constraint parameters
operative on said groups of audio sources and components of said groups (Fig. 2).

Regarding **Claim 9** in addition to the elements stated above regarding claim 9,
Pachet further discloses:

wherein said interface unit is adapted to present each said constraint by a
corresponding icon such that they can be linked graphically to an object to be
constrained through displayed connections (Fig. 2).

Regarding **Claim 11**, in addition to the elements stated above regarding claim 44,

Pachet further discloses:

wherein each constraint is configured as a data string containing a variable part and a constraint part (e.e. constraints are defiend by relations holding on variables;

Section 3.2; i.e. MidiSpace variables and MidiSpace constraints).

Regarding **Claim 12**, in addition to the elements stated above regarding claim 11,

Pachet further discloses:

wherein said variable part expresses at least one among:

a variable type, indicating whether it acts on an audio track or said group,

track identification data,

a variable name,

a variable icon,

individual loudness,

initial position data (sections 3.1-3.4 Fig. 2)

Regarding **Claim 13**, in addition to the elements stated above regarding claim 11,

Pachet further discloses:

wherein said constraint part expresses at least one among:

a constraint type, constrained variable,

a list of input variables,

a list of output variables,

constraint position,

constraint orientations (sections 3.1-3.4 Fig. 2).

Regarding **Claim 23**, in addition to the elements stated above regarding claim 44,
Pachet further discloses:

wherein said constraints are comprise functional and/or inequality constraints,
wherein cyclic constraints are processed through a propagation algorithm by merely
checking conflicts (3.2 – 3.4).


Regarding **Claim 46**, in addition to the elements stated above regarding claim 44,
Pachet further discloses:

a decoding unit configured to decode the audio stream coded in the common file and
extract the plurality of audio sources from the common file (i.e. an inherent decoder
must be present in Pachet to decode the MIDI files for conversion to an analog form
to playback on the speakers, futher, the software is to be used on mixing consoles,
such as the Yamaha 02R which includes various decoders.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10, 14 – 17, 21, 24 – 26, 28, 31 ~~and~~ 36 – 39^{and 41} are rejected under 35 U.S.C. 103(a) as being unpatentable over Pachet (Constraint-Based Spatialization; Sony Computer Science Laboratories) in view of Lydecker (U.S. Patent Application Publication 2003/0028273). 

Regarding **Claim 10**, in addition to the elements stated above regarding claim 44, Pachet fails to explicitly disclose wherein said constraints are recorded in terms of meta data associated with said audio stream.

Lydecker discloses a recording and playback control system. In the system of Lydecker, multiple channels of audio data are interleaved with acoustic control data. The control data at least in part may be entered by a producer of the multichannel compilation (para. 0017-27).

Modifying Pachet to include the features of Lydecker discloses:

said constraints (control data of Lydecker, para. 0017-27, in view of constraints of Pachet) are recorded in terms of metadata (sector 46, Figure 2) associated with said audio stream (such sectors 46 may be in every sector 40; data in sector 46 pertains to recording and reproduction of program data, para. 0017, 0028-0030, 0039-0045).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to record the constraint data of Pachet in the manner disclosed for the acoustic control data in the system of Lydecker. The motivation behind such a modification would have been that such a recording manner would have enabled a producer of the multichannel audio presentation to specify particular parameters for the reproduction of the performance. Such parameters would have enabled an end user or customer to receive or derive default or automatic playback parameters for the reproduction of the multichannel audio, as is noted by Lydecker.

Regarding **Claim 14**, Lydecker particularly suggests:

wherein multiple audio sources for said spatialisation are accessed from a common recorded storage medium (audio and control data from DVD, para. 0031).
Motivation to combine Lydecker with Pachet is given in the rejection of claim 10.

Regarding **Claim 15**, Lydecker particularly suggests:

wherein said constraints are accessed from said common recorded medium as metadata (AVCD data is descriptive of audio data, para. 0018-0027; demuxed from DVD data and applied to separate buffers, para. 0031).

Regarding **Claim 16**, Lydecker, in view of the teachings of other applied reference(s), at least suggests:

said metadata (control AVCD, in view of constraints of Delerue) and said tracks (audio data) in which said audio stream is recorded are accessed from a common file (control data and audio data are in same sector of DVD format, para. 0028-0030; a File on a DVD is set of such sectors with sectors in a continuously ascending sequence, per the UDF Bridge file format of the DVD specification).

Regarding **Claim 17**, Lydecker, in view of the teachings of other applied reference(s), at least suggests:

further comprising an audio data and meta data decoder (demux 52 and circuitry for other control operations, such as error correction, para. 0031) for accessing from a common file (file comprising sectors such as shown in Figure 2, para. 0029-31) audio data (program data 44) and metadata expressing said constraints (46, control data in view of constraints in Pacht) and recreating (separating into buffers, 54,56) therefrom:

a set of audio streams from each individual track contained in said file (program data 44, which is multichannel stream data, para. 0016; six streams, for example, para. 0033), and

the specification of said metadata (AVCD section 46) from an encoded format (partitioned and assigned parity and error correction codes, para. 0039) of said file (overall file of sector shown in Figure 2)(control data AVCD is buffered, 54, para. 0031,

taking such control data in view of control/constraint data of Pachet; data in 54 utilized in the control of playback of audio streams, para. 0041).

Regarding **Claim 21**, in addition to the elements stated above regarding claim 44, Pachet further discloses:

wherein said input means is adapted to access audio tracks of said audio stream (i.e. sound sources).

Pachet fails to explicitly disclose wherein said audio tracks of said audio stream are interlaced in a common file.

Lydecker discloses wherein said audio tracks of said audio stream are interlaced in a common file (file comprising sectors such as shown in Figure 2, para. 0029-31; audio data 44 and control data 46 in view of the constraints disclosed by Pachet).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to record the constraint data of Pachet in the manner disclosed for the acoustic control data in the system of Lydecker. The motivation behind such a modification would have been that such a recording manner would have enabled a producer of the multichannel audio presentation to specify particular parameters for the reproduction of the performance. Such parameters would have enabled an end user or customer to receive or derive default or automatic playback parameters for the reproduction of the multichannel audio, as is noted by Lydecker.

Regarding **Claim 24**, in addition to the elements stated above regarding claim 44, Pachet fails to explicitly disclose the limitations of claim 24.

Lydecker, in view of the teachings of other applied reference(s), at least suggests:

a means for encoding individual sound sources and (16 and 28 of Lydecker)

a database describing the constraints and relating constraint variables (ACVD data stored in memory 20 of Lydecker, para. 0017-0027, in view of constraint control data disclosed by Pachet).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to record the constraint data of Pachet in the manner disclosed for the acoustic control data in the system of Lydecker. The motivation behind such a modification would have been that such a recording manner would have enabled a producer of the multichannel audio presentation to specify particular parameters for the reproduction of the performance. Such parameters would have enabled an end user or customer to receive or derive default or automatic playback parameters for the reproduction of the multichannel audio, as is noted by Lydecker.

Regarding **Claim 25**, Lydecker, in view of the teachings of other applied reference(s) in claim 24, at least suggests:

means for decoding (52 and other control function circuitry) said common audio file (from sectors, Figure 2) in synchronism (in a complementary manner) with said

encoding means data originally encoded by Lydecker, para. 0028 is returned to separate data, para. 0031).

Regarding **Claim 26**, Pachet in particular view of Lydecker, in view of the teachings of other applied reference(s), at least suggests:

a constraint system module for inputting a database describing the constraints and relating constraint variables for each music title (setting of constraints in Pachet, in view of receipt and application of control data, para. 0031 and 0041 of Lydecker), thereby creating spatialisation commands (active constraints in impart spatialization commands in Pachet); and

a spatialisation controller module (code underlying of Pachet) for inputting said set of audio streams given by encoding means (28,30 of Lydecker) (input of Pachet in view of muxing and formatting of multiple tracks and control data in Lydecker, para. 0028), and

spatialisation commands (from Pachet) given by said constraint system module (para. 0028).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to record the constraint data of Pachet in the manner disclosed for the acoustic control data in the system of Lydecker. The motivation behind such a modification would have been that such a recording manner would have enabled a producer of the multichannel audio presentation to specify particular parameters for the

reproduction of the performance. Such parameters would have enabled an end user or customer to receive or derive default or automatic playback parameters for the reproduction of the multichannel audio, as is noted by Lydecker.

Regarding **Claim 28**, the combination in view of the teachings of other applied reference(s) in claim 26, at least suggests:

wherein said spatialisation controller module (3.1 – 3.4) further comprises a scheduler means for connecting (circuitry that applies solutions for intermediate sample positions in order to establish the impression that the spatialization system reacts continuously) said constraint system module and said spatialisation controller module (Sections 3.1 – 3.4)

Regarding **Claim 31**, in addition to the elements stated above regarding claim 26, the combination discloses:

wherein said spatialisation controller module is a remote controllable mixing device (i.e. all devices are controllable from a distance, thus the device disclosed by the combination can be considered to be 'remote'. Furthermore, devices such as the combination can be controlled at a distance using computer networks and the like and thus can be considered 'remote').

Regarding **Claim 36**, in addition to the elements stated above regarding claim 44, Pachet fails to disclose the limitations of claim 36.

Lydecker, in view of the teachings of other applied reference(s), at least suggests:

A storage medium (DVD) containing data (applied to 52,54) specifically adapted for exploitation by an audio spatialization control system according to claim 1 (control of audio data, para. 0041, in view of system of Pachet and modifications noted above with regards to Claim 1) comprising a plurality of tracks forming an audio stream (para. 0016) and data representative of said processing constraints (control data, para. 0017, in view of constraints as control as taught by Pachet; combined audio and control data on DVD, para. 0028 of Lydecker).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to record the constraint data of Pachet in the manner disclosed for the acoustic control data in the system of Lydecker. The motivation behind such a modification would have been that such a recording manner would have enabled a producer of the multichannel audio presentation to specify particular parameters for the reproduction of the performance. Such parameters would have enabled an end user or customer to receive or derive default or automatic playback parameters for the reproduction of the multichannel audio, as is noted by Lydecker.

Regarding **Claim 37**, in addition to the elements stated above regarding claim 36, Lydecker, in view of the teachings of other applied reference(s), at least suggests: wherein said data representative of said processing constraints (control data, para. 0017, in view of constraints as control as taught by Pachet) and said plurality of

tracks (multichannel audio, para. 0016) are recorded in a common file(control data in every sector with audio data, para. 0030; audio data is mixed multichannel stream, para. 0016; sectors of DVD are subsections of over all file on DVD, per DVD standard, thus, sectors of Figure 2 represent overall, common file).

Regarding **Claim 38**, in addition to the elements stated above regarding claim 36, Lydecker, in view of the teachings of other applied reference(s), at least suggests:


wherein said data representative of said processing constraints (in 46) are recorded as metadata with respect to said tracks (in 44) (Figure 2; data in section 46 pertains to data in 44, para. 0017-0028; control data may be recorded in every sector, para. 0030).

Regarding **Claim 39**, in addition to the elements stated above regarding claim 36, the combination further discloses:

wherein said tracks are interlaced (i.e. mixed)

Regarding **Claim 41**, in addition to the elements stated above regarding claim 36, the combination fails to explicitly disclose the storage medium according to claim 36 in the form of a computer hard disk. However, hard disks are notoriously well known in the art. The disc in the combination is a DVD. A DVD and a hard disk for storage purposes are art recognized equivalents. It would have been obvious to one of ordinary

skill in the art at the time of the invention to use a hard disk in place of the DVD. One would have been motivated to do so to allow streaming or networked audio play rather than having to purchase a physical disk.

Claims 18 and ^{and 42}32 are rejected under 35 U.S.C. 103(a) as being unpatentable  over Pachet (Constraint-Based Spatialization; Sony Computer Science Laboratories) in view of O'Connell (U.S. Patent 5,331,111).

Regarding **Claim 18**, in addition to the elements stated in claim 44, Pachet fails to explicitly disclose the system implemented as an interface to a computer operating system and a sound card.

Applying the teachings of Pachet to the system of O'Connell discloses :
the system (as shown in claim 44) implemented as an interface to a computer operating system and a sound card (components of engine executed by host system, col. 5, lines 23-41; col. 12, lines 1-18) and a sound card (18)(col. 4, lines 57-61; col. 12, lines 1-18).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Pachet on a computer system such as the one disclosed by O'Connell. Pachet discloses a graphical user interface produced by a computer system, such as the one disclosed by O'Connell. Computer systems such as the one disclosed by O'Connell are notoriously well known in the art. It would be

desirable to provide the software as disclosed by Pachet to computers that are widely available and well known.

Regarding **Claim 32**, in addition to the elements tated above regarding claim 44, Pachet fails to explicitly disclose the limitations set forth in claim 32.

O'Connell, in view of the teachings of other applied reference(s) claim 44, at least suggests:

said constraint means (3.1-3.4 of Pachet in view of controller of O'Connell) is configured to execute a test algorithm (col. 56, lines 28-30).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Pachet on a computer system such as the one disclosed by O'Connell. Pachet discloses a graphical user interface produced by a computer system, such as the one disclosed by O'Connell. Comptuer systems such as the one disclosed by O'Connell are notoriously well known in the art. It would be desirable to provide the software as disclosed by Pachet to computers that are widely available and well known.

Regarding **Claim 42**, in addition to the elements tated above regarding claim 44, Pachet fails to explicitly disclose the limitations set forth in claim 42.

However, Pachet indicates that the device can be implemented in software (as evidenced by the GUI screen and other various references throughout).

Implementing it in software would require a computing device, such as the one disclosed by O'Connell. Applying the software of Pachet to the Computer disclosed by O'Connell discloses:

A computer program product loadable into the internal memory unit of a general-purpose computer, comprising a software code unit for coding the system according to claim 44 and implementing the means described in said system, when said computer program is run on a computer (i.e. software of Pachet executed on computer of O'Connell).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Pachet on a computer system such as the one disclosed by O'Connell. Pachet discloses a graphical user interface produced by a computer system, such as the one disclosed by O'Connell. Computer systems such as the one disclosed by O'Connell are notoriously well known in the art. It would be desirable to provide the software as disclosed by Pachet to computers that are widely available and well known.

Claims 19, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pachet (Constraint-Based Spatialization; Sony Computer Science

Laboratories) in view of O'Connell (U.S. Patent 5,331,111) and in further view of Bargaen (Inside DirectX; Microsoft Press).

Regarding **Claim 19**, in addition to the elements stated above regarding claim 44:

As detailed above, Pachet discloses a music spatialization system, wherein sources are represented as icons in a graphical space, movements of icons by a user reflect desired spatialization of the corresponding sources in a virtual sound field, and rules may be applied to sources regarding the desired, permissible movement of the sources within the sound field.

Pachet fails to disclose the limitations of claim 19.

O'Connell particularly teaches the use of a sound accelerator board as part of a system running a graphically based audio program or engine

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Pachet on a computer system such as the one disclosed by O'Connell. Pachet discloses a graphical user interface produced by a computer system, such as the one disclosed by O'Connell. Computer systems such as the one disclosed by O'Connell are notoriously well known in the art. It would be desirable to provide the software as disclosed by Pachet to computers that are widely available and well known.

Further, the combination does not clearly specify:

cooperating with a sound card and three dimensional audio buffering means said buffering means being physically located in a memory of said sound card so as to benefit from three-dimensional acceleration features of said card

DirectX is a middleware software system produced by Microsoft comprising tools for the implementation of video and audio in a computer environment.

Specifically regarding Claim 19, DirectX teaches: cooperating with a sound card ("sound cards") and three dimensional audio buffering means ("secondary buffer with 3D capabilities")(pages 225,258) said buffering means being physically located in a memory of said sound card so as to benefit from three dimensional acceleration features of said card (page 225)

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to implement the system of the combination utilizing the DirectX software platform. The motivation behind such a modification would have been that a composite system implemented in such a manner would have provided access for the spatialization system to multimedia hardware in a device-independent manner, enabled hardware advances to be taken advantage of as they occur, and maximized hardware support across a variety of hardware configurations. Utilizing buffers on a sound card, as is noted by DirectX, would have ensured that a throughput sound would take the shortest route to a primary buffer, the main output buffer for a sound card. Utilizing the 3D sound capabilities of DirectX would have enabled the implementation of real-time, fully animated 3D environments under the Windows operating system.

Regarding **Claim 20**, in addition to the elements stated above regarding claim 19, the combination further discloses:

a waitable timer for controlling writing tasks into said buffering means (code that implements polling, checking the buffers at regular intervals for the purpose of delivering data thereto; page 241 in DirectX).

Regarding **Claim 22**, in addition to the elements stated above regarding claim 44, the combination fails to explicitly disclose the limitations of claim 22.

Bargen discloses:

adapted to cooperate with a three dimensional sound buffer (page 258) for introducing an orientation constraint (orientation is a property of 3D DirectX buffer; pages 252-253 and 260; taken in view of setting of constraints in Delerue for property of position relative to listener, para. 0036, which is another property of DirectX sound buffers, page 251).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to implement the system of the combination utilizing the DirectX software platform. The motivation behind such a modification would have been that a composite system implemented in such a manner would have provided access for the spatialization system to multimedia hardware in a device-independent manner, enabled hardware advances to be taken advantage of as they occur, and maximized hardware support across a variety of hardware configurations. Utilizing buffers on a sound card, as is noted by DirectX, would have ensured that a throughput sound would take the

shortest route to a primary buffer, the main output buffer for a sound card. Utilizing the 3D sound capabilities of DirectX would have enabled the implementation of real-time, fully animated 3D environments under the Windows operating system.

Claims 27, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pachet (Constraint-Based Spatialization; Sony Computer Science Laboratories) in view of Lydecker (U.S. Patent Application Publication 2003/0028273) and in further view of Bargaen (Inside DirectX; Microsoft Press).

Regarding **Claim 27**, in addition to the elements stated above regarding claim 26, the combination fails to explicitly disclose the limitations of claim 27.

DirectX, in view of the teachings of other applied reference(s), at least suggests: further comprising three-dimensional sound buffer means (page 257-259), in which a writing task and a reading task for each sound source are synchronized (page 241)

said means thereby relaying said audio stream coming from an audio file into a spatialisation controller module (buffers are source of sound, page 203-204, in view of application of sound sources (via 50) to code representing spatialization unit 5 of Delerue, para. 0028) and

relaying said database describing the constraints and relating constraint variables for each music title into said constraint module means (output of control data

to control buffers in Lydecker, para 0031 and 0041; in view of constraints stored as controls in system of Delerue, para. 0024).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to implement the system of the combination utilizing the DirectX software platform. The motivation behind such a modification would have been that a composite system implemented in such a manner would have provided access for the spatialization system to multimedia hardware in a device-independent manner, enabled hardware advances to be taken advantage of as they occur, and maximized hardware support across a variety of hardware configurations. Utilizing buffers on a sound card, as is noted by DirectX, would have ensured that a throughput sound would take the shortest route to a primary buffer, the main output buffer for a sound card. Utilizing the 3D sound capabilities of DirectX would have enabled the implementation of real-time, fully animated 3D environments under the Windows operating system.

Regarding **Claim 29**, DirectX, in view of the teachings of other applied reference(s) as in claim 27, at least suggests:

wherein said spatialisation controller module comprises static audio secondary buffer means (page 225).

Regarding **Claim 30**, DirectX, in view of the teachings of other applied reference(s) as in claim 27, at least suggests:

comprising a timer means for waking up said writing task at predetermined intervals (code that regularly polls buffer for purpose of delivering data thereto; operates at regular intervals, pages 241-242)

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pachet (Constraint-Based Spatialization; Sony Computer Science Laboratories) in view of Lydecker (U.S. Patent Application Publication 2003/0028273) and in further view of O'Connell (U.S. Patent 5,331,111).

Regarding **Claim 33**, Pachet fails to explicitly disclose the limitations of claim 33.

Pachet, in view of the teachings of Lydecker and O'Connell as applied, at least suggest: A spatialisation apparatus (Pachet) comprising:

- a personal computer (Pachet in software in view of computer of O'Connell, col. 4, lines 44-56) having a data reader (col. 5, lines 9-21 of O'Connell) for reading from a common data medium both audio stream data and data representative of constraints for spatialization (audio data and control/AVCD of Lydecker, para. 0031 in view of constraint controls of Delerue), and

an audio spatialisation system according to claim 44 (Pachet in view of modifications noted above in claim 1), having its input means adapted to receive data

from said data reader (reading and buffering of audio and control data from DVD of Lydecker, para. 0031, in view of input of Pachet).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Pachet on a computer system such as the one disclosed by O'Connell. Pachet discloses a graphical user interface produced by a computer system, such as the one disclosed by O'Connell. Computer systems such as the one disclosed by O'Connell are notoriously well known in the art. It would be desirable to provide the software as disclosed by Pachet to computers that are widely available and well known.

Furthermore, it would have been obvious to record the constraint data of Pachet in the manner disclosed for the acoustic control data in the system of Lydecker. The motivation behind such a modification would have been that such a recording manner would have enabled a producer of the multichannel audio presentation to specify particular parameters for the reproduction of the performance. Such parameters would have enabled an end user or customer to receive or derive default or automatic playback parameters for the reproduction of the multichannel audio, as is noted by Lydecker.

Claims 34, 35 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pachet (Constraint-Based Spatialization; Sony Computer Science Laboratories) in view of Lydecker (U.S. Patent Application Publication 2003/0028273)

and in further view of O'Connell (U.S. Patent 5,331,111) and in further view of Bargaen (Inside DirectX; Microsoft Press).

Regarding **Claim 34**, in addition to the elements stated above regarding claim 33, the combination fails to explicitly disclose the limitation set forth in claim 34:

The combination in view of DirectX discloses:

wherein said computer (Pachet's software on O'Connell's computer) comprises a three-dimensional sound buffer (pages 257-259 of DirectX) for storing contents extracted from data reader (application of sound data to buffers in Lydecker, para. 0031, in view of sound sources as secondary buffers - which may be 3D - in DirectX, pages 203-204 and 257-259).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to implement the system of the combination utilizing the DirectX software platform. The motivation behind such a modification would have been that a composite system implemented in such a manner would have provided access for the spatialization system to multimedia hardware in a device-independent manner, enabled hardware advances to be taken advantage of as they occur, and maximized hardware support across a variety of hardware configurations. Utilizing buffers on a sound card, as is noted by DirectX, would have ensured that a throughput sound would take the shortest route to a primary buffer, the main output buffer for a sound card. Utilizing the 3D sound capabilities of DirectX would have enabled the implementation of real-time, fully animated 3D environments under the Windows operating system.

Regarding **Claim 35**, DirectX, in view of the teachings of other applied reference(s), at least suggests:

wherein said sound buffer is controlled through a dynamic link library (implementing programs on DirectX platform involves linking code to DirectX libraries, which include interface methods for 3d buffers, pages 26-27 and 259-261).

Regarding **Claim 40**, in addition to the elements stated above regarding claim 35, Lydecker, in view of the teachings of other applied reference(s), at least suggests:

in the form of any digital storage medium (DVD, para. 0028-0029).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C. Flanders whose telephone number is (571) 272-7516. The examiner can normally be reached on M-F 8:30 - 5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7546. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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SUPERVISORY PATENT EXAMINER